

CLAIMS:

1. A frequency changer of one of a zero intermediate frequency type and a near-zero intermediate frequency type, comprising an oscillator arrangement and a first multiplier having a first input for receiving an input signal in a first frequency band and a second input connected to said oscillator arrangement, said oscillator arrangement comprising a first oscillator for supplying a first signal in said first frequency band to said second input of said first multiplier, a second oscillator for producing a second signal in a second frequency band outside said first frequency band, and a reference oscillator, said first oscillator being phase-locked to said second oscillator and said second oscillator being phase-locked to said reference oscillator.
2. A frequency changer as claimed in claim 1, in which said second frequency band is lower than said first frequency band.
3. A frequency changer as claimed in claim 1, in which said first frequency band is within 950 to 2150 MHz.
4. A frequency changer as claimed in claim 1, in which said second frequency band is within a UHF band.
5. A frequency changer as claimed in claim 4, in which said second frequency band is within 400 to 600 MHz.
6. A frequency changer as claimed in claim 1, comprising a low pass filter, said first multiplier having an output for supplying an output signal to said low pass filter.
7. A frequency changer as claimed in claim 6, in which said low pass filter has a cut-off frequency of between 5 MHz and 40 MHz.

8. A frequency changer as claimed in claim 1, comprising a second multiplier having a first input for receiving said input signal and a second input connected to said oscillator arrangement for receiving a quadrature signal which is in quadrature with said first signal.
9. A frequency changer as claimed in claim 8, comprising a phase adjusting network, to which said first oscillator is connected, for forming said first signal and said quadrature signal.
10. A frequency changer as claimed in claim 8, in which said first oscillator comprises a ring oscillator having first and second outputs for supplying said first signal and said quadrature signal.
11. A frequency changer as claimed in claim 1, in which said first oscillator has a control input and said first and second oscillators form part of a first phase-locked loop comprising: a first programmable divider; a first comparator having an output, a first input connected via said first divider to said first oscillator and a second input connected to said second oscillator; and a first control loop connected between said output of said first comparator and said control input of said first oscillator.
12. A frequency changer as claimed in claim 11, in which said first programmable divider has selectable divisors of two, three and four.
13. A frequency changer as claimed in claim 1, in which said second oscillator has a control input and said second and reference oscillators form part of a second phase-locked loop comprising: a second programmable divider; a third programmable divider; a second comparator having an output, a first input connected via said second programmable divider to said second oscillator and a second input connected via said third programmable divider to said reference oscillator; and a second control loop connected between said output of said second comparator and said control input of said second oscillator.

15. A digital tuner frequency changer of one of a zero intermediate frequency type and a near-zero intermediate frequency type, comprising an oscillator arrangement and a first multiplier having a first input for receiving an input signal in a first frequency band and a second input connected to said oscillator arrangement, said oscillator arrangement comprising a first oscillator for supplying a first signal in said first frequency band to said second input of said first multiplier, a second oscillator for producing a second signal in a second frequency band outside said first frequency band, and a reference oscillator, said first oscillator being phase-locked to said second oscillator and said second oscillator being phase-locked to said reference oscillator.

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